"In Eight and a Half Seconds the World Has Changed"

An Interview with Telecommunication Art Pioneer Bill Bartlett

Tilman Baumgärtel

Figure 1: Bill Bartlett

Source: Private.

Bill Bartlett was among a small group of international artists who used the telecommunication media that became available to them in the late 1970s and early 1980s to conduct artistic actions, performances, and collaborations. For this purpose, they experimented with early computer networks, satellite connections, and later fax and ARPA-net email. But the most important and most accessible media for these activities was the little-known Slow Scan Television (SSTV) that they used to send pictures in real time from and to art spaces and studios in North America and Europe (Bartlett 2019).

SSTV was an analogue picture transmission method, used mainly by amateur radio operators, to transmit and receive static pictures via radio in black and white and without sound. SSTV has also been called "narrowband television." It was employed during the space missions Apollo 7, Apollo 8, Apollo 9, and Apollo 11 to send pictures from space to NASA, but later also by ham radio enthusiasts who wanted to create their own low-band television stations and to set up early precursors of today's teleconferences.

The ways in which artists used this technology predate contemporary video conferences in terms of not only technology but also the methods they developed to interact and collaborate. A lot of the artistic work that was done via SSTV addresses the ways of "making contact" with remote partners and associates via telecommunication media. Since there was no inherent audio connection, communication via gestures, symbols, visual clues, props, and methods such as sign language became an important part of their artistic exploration and vocabulary.

Today, these experiments are not very well remembered, partly because of their time-based and ephemeral nature, partly because they did not fit into an art world that has increasingly focused on *commodifiable* paintings and objects that can be traded on the art market. For a long time, there were technical issues, too: the SSTV performances by Bartlett and other artists were recorded as modem-style sound signals on audio tapes with a recording device called Robot. These analogue files tapes were only recently decoded using historic equipment and modern computers and are now available in digital format.

These experiments belong to a little-known prehistory of the internet-based art of today. The best-known attempts to induct art into the global media at that time were by Nam June Paik, who made television as well as history with the global satellite projects *Good Morning, Mr. Orwell* (1984), *Bye Bye Kipling* (1986), and *Wrap around the World* (1988). Like Paik, other artists tried to get access to international television satellites and global media networks early on: in 1980, the artist duo Mobile Image (Kit Galloway and Sherrie Rabinowitz) in their work *Hole in Space: A Public Communication Sculpture* had people in New York and Los Angeles interact live with each other via satellite video connection; "satellite sculptures" almost became a genre in its own right in the following years, with artists as diverse as Ingo Günther, Peter Fend, Dennis Oppenheim, Sharon Grace, Liza Bear/Willoughby Sharp, Wolfgang Staehle, and General Idea participating (for an overview of this period of media art, see Baumgärtel 2000). From today's point of view, these artistic endeavours preceded the video conferences of today not only on a conceptual level in a technical environment that wasn't accessible to most people. They also initiated modes of interaction and forms of communication that have since become commonplace in our use of Skype, Zoom, FaceTime, and other platforms.

An important instance of the artistic attempt to "open up" the very expensive and inaccessible international media networks was the conference "Artists' Use of

Telecommunication" in which Bill Bartlett participated at the San Francisco Museum of Modern Art, where it was physically held, but in which artists in other cities and countries were connected via satellite using the time-sharing computer system of the insurance company I. P. Sharp. "Remote participants" in this symposium included Gene Youngblood (Los Angeles), Hank Bull (Vancouver), Douglas Davis (New York), Norman White (Toronto), and Robert Adrian X (Vienna). All the mentioned artists were pioneers of the use of telecommunication in the arts.

In the late sixties, Bill Bartlett was involved with the initiative *Experiments in Arts and Technology* (E.A.T.) after he had received his bachelor of fine arts at the Otis Art Institute in Los Angeles. E.A.T. was a nonprofit and tax-exempt organization that was established in 1967 to develop collaborations between artists and engineers (NTT InterCommunication Center 2003). Engineers Billy Klüver and Fred Waldhauer and artists Robert Rauschenberg and Robert Whitman had collaborated in 1966 on the groundbreaking performance art event *9 Evenings: Theatre and Engineering* in New York. They subsequently formed E.A.T to continue to combine the aesthetics interests of artists with the technical expertise of technicians, which enabled artists such as John Cage, Lucinda Childs, Öyvind Fahlström, Deborah Hay, Yvonne Rainer, and David Tudor to create work they would not have been able to do without technical support. The pinnacle of the activities of E.A.T. was the Pavilion for the Osaka World Fair in 1970, which was sponsored by Pepsi and was a psychedelic *Gesamtkunstwerk* with contributions by artists such as David Tudor, Fujiko Nakaya, Robert Breer, and Robert Whitman (Kluver et al. 1972). Bartlett was a volunteer at the Los Angeles office of the organization and worked on the construction of an early version of the pneumatic Pavilion in the US.

After moving to Victoria, Canada, he cofounded the Northwest Coast Institute of the Arts (today the Victoria College of Art) and joined the artists initiative Open Space, where he was instrumental in setting up an exhibition space that is still operational today. As artistic director, he got involved with artists who were using Slow Scan TV and computer networking. That led to the development of ARTEX, the first online system for artists, that was used for a number of groundbreaking online art projects. He organized twenty-two telecommunication events between 1978 and 1983, including *Sat-Tel-Comp*, *Pacific Rim*, and *Interplay Workshop*, where the artistic use of Slow Scan Television was part of the aesthetic tool set.

The Slow Scan technology that Bartlett used around 1980 was only able to send individual, sequential pictures over copper telephone lines. When ISDN became available, it became possible to actually "stream" moving images around the globe without access to expensive telecommunication satellites, for example during the art project *Piazza Virtuale* by the German media art group *Van Gogh TV* at documenta 9 in 1992 (Baumgärtel 2021), which simultaneously used a version of SSTV to connect with studios in countries where ISDN television was not available (Van Gogh TV 2021). Hence, the use of the low-resolution, static transmission of black-and-

white images via the Robot encoder and copper telephone cables was a step toward a television that was run and transmitted by artists.

At the same time, it allowed their users an early form of the kind of tele-interaction that we take for granted today, especially after the Covid pandemic made video conferencing ubiquitous. Whereas these interactions were originally limited to facial expressions and gestures, as there were no audio connections in the first iterations of the technology, the creative ways to overcome those constraints are also a precursor of the ways that the world adapted Zoom and other platforms to their needs during the Corona pandemic.

Tilman Baumgärtel

Tilman Baumgärtel: In the late 1970s and early 1980s, you were involved in a number of art projects that used Slow Scan Television (SSTV). I would like to begin the interview with a technical question. Can you explain, first of all, what Slow Scan Television was and why it attracted you as an artist?

Bill Barlett: Slow Scan Television was developed by a fellow from Eastern Canada in 1958. His name was Copthorne Macdonald, and he developed a method to send pictures via ham radio. Depending on the connection you send a black-and-white still picture in eight and a half seconds, but if the connection was slow, it could take up to a minute to wire a picture from one location to another. These pictures consisted out of 120 lines, and each line had 120 pixels that would appear line by line on the monitor of the receiver, kind of like a fax. Depending on the speed, these sequences of still pictures were like the different phases of a filmed movement. It was a freeze-frame that was scanned down in an eight-and-a-half-second scan that would actually replace the previous image.
I was interested in this technology because it provided a way to communicate with others via a 3 kHz telephone channel. It wasn't exactly like having your own television station, but it was a way to transfer somewhat moving pictures from your place to another place. We were using a standard video camera to record ourselves. You would take the image, convert it into an audio signal with the Robot Research 530 Phone Line Transceiver, and all of this beep-beep-beep-beep-sound would be sent through a normal phone line, through ham radio, whatever way you can send a voice. You could send those pictures via shortwave, VHF, and UHF radio in your vicinity, and if you hooked it up to the telephone network, you could send these pictures to any other telephone connection in the world.

Tilman Baumgärtel: Did you have a background in media art before you started to work with SSTV?

Bill Barlett: When I was getting my bachelor of fine arts degree at the Otis Art Institute in Los Angeles in 1970, I was interested in both sculpture and figurative art and life drawing. While I was in Los Angeles, I got involved in performance art. And I was a volunteer for Experiments in Art and Technology (E.A.T.), an organization that the artist Robert Rauschenberg and the engineer Billy Klüver started in New York in the 1960s and that was about putting artists together with engineers. They opened an office in Los Angeles. Somehow, I got into volunteering to run their office in LA, and it gave me an opportunity to look through all the files. Art critic Gene Youngblood and a lot of people that were active in the area were quite taken by E.A.T.
I also worked on the construction of the large Spherical Mirror Dome, that E.A.T. presented at Expo '70 in Osaka, Japan. I was one of the artists working on the design model. They set up a big workstation in a dirigible hanger in a military base down south of Los Angeles with guards with machine guns guarding the place and designed the gores and put them together. It was a pneumatic structure, a ninety-five-foot mylar dome mock-up that was sponsored by Pepsi. We would cut gores from rolls of mylar and tape them together. The dome sort of exploded and had to be redesigned, but it was a fabulous experience to work on that.

Tilman Baumgärtel: In the 1970s, you were involved with the nonprofit arts organization Open Space in Victoria, Canada, and later founded your own group, the Direct Media Association, that developed global art events that used SSTV and pre-internet computer networks to connect artist around the world. At this time only a very small group of artists were involved with network and telecommunication art. How did you become part of this scene?

Bill Barlett: One of the programs that we had for the Open Space Arts Society in Victoria was—my wife actually coined the term—the Collaboratory. It was a cross between collaboration and laboratory, a kind of workshop. We came up with the Collabratory idea at just about the time when I went to a session at the LA Institute of Contemporary Art (LAICA), where one of the featured speakers was filmmaker and artist Liza Bear. She had done the *Send/Receive* project about six months before, where the artists set up a two-way satellite link between New York and San Francisco using a satellite that was co-owned by NASA and the Canadian government. The resulting program was broadcast on Manhattan Cable's public access channel.

Tilman Baumgärtel: *Send/Receive* (1977) was a pioneering piece of telecommunication art; the artists involved include Terry Fox, Sharon Grace, and Carl Loeffler in San Francisco, and Liza Bear, Willoughby Sharp, and Keith Sonnier in New York. Bear and Sharp were early champions of the artists' use of telecommunication me-

dia. It is probably impossible today to imagine how hard it was for people who did not work for a television station to broadcast material to other people. Today, with YouTube and Zoom and streaming it has become so common …

Bill Barlett: Actually, they had a lot of technical problems with the satellite when they did *Send/Receive*. I was introduced to Slow Scan TV at the same time Liza Bear was, probably at LAICA. The next Collaboratory was called *Sat-Tel-Comp*, which stood for Satellite Telephone Computer, and we invited Liza Bear to come to Open Space from October 30 to December 9, 1978. Prior to that, in May and June of 1978, we started a series of small interactive link-ups in preparation. One was with Willoughby Sharp in New York, one was with Sharon Grace in San Francisco, one was done locally in Victoria, and one was multipoint with artists in Victoria, Vancouver, Toronto, and Memphis, Tennessee.

Figure 2: Sat-Tel-Com performance at Open Space (1978). Jim Starck, Bill Bartlett with mirror, Jim Lindsay, Chas Leckie, Susan Cormin, Daryl Lacey (Video Inn)

Source: Open Space Archives, Victoria, BC, Canada.

Tilman Baumgärtel: Who were these collaborators in these different cities?

Bill Barlett: When I was working at Open Space, I went to a lot of art spaces in North America. There was the organisation for artist-run centers (ANNPAC), and I did make a point of networking and getting out across Canada visiting these centers representing Open Space. They would eventually be the link for the telecommunication projects. That played a big part in the organization of these SSTV projects because it didn't just happen overnight with making the contacts. They came from a lot of legwork.

Tilman Baumgärtel: If you look at the pictures from these events, there is a lot of equipment …

Bill Barlett: Yes, it looks like a lot of technology, but it's actually not very sophisticated. Once you had the equipment, the Robot for SSTV, monitors, camera, recording device, phone lines, it was not very difficult to operate.

Tilman Baumgärtel: You used this kind of technology to do performances at the Vancouver Art Gallery, the San Francisco Museum of Modern Art, MIT in Boston, and many artist centers around the world. You had to introduce all these places to the SSTV technology …

Bill Barlett: … and sometimes it was very hands-on. There's one photo of me where I basically take an old handheld telephone, unscrew the speaker part, put some boxer clamps or whatever onto the wires, and then feed the audio signal right through the Robot transceiver into the phone link.

Tilman Baumgärtel: Well, that's what the early hackers did when they did not have a real modem …

Bill Barlett: That's right. It was just another hack. You could have more complicated setups, where you had one monitor that showed the SSTV scan and the other monitor showedwhat the camera was seeing. But in any case, it was really low tech. Inexpensive. And we could do it almost at any place as long as we could get matching equipment at the other end, which we usually borrowed from the equipment dealers. You could do it with only one person if you wanted. I invested into the basic equipment to make it happen, but overall it was not very expensive. And because of

all the networking, slowly an infrastructure for this kind of activity started building up. So, one event literally built on another.

Tilman Baumgärtel: What were these performances like that you did via SSTV?

Bill Barlett: These activities were very informal. We would just sit down and talk about what we should do. You'd sort of make a plan on what you want to do, knowing the Robot took eight and a half seconds per image, and work in a progression of images. Look into the camera, respond to the last image, and finish the piece. I could do some visual sign or symbols or something. Then I could put a sign up that said, "Over to you." And then the other party would know that they could start sending or I could turn the camera to you. It was just a steady stream of images. You did it because you could watch, see what was on the monitor …
Remember, at first, we had no audio connection, there was only this stream of freeze-frame pictures. So, anything we wanted to communicate, we had to do with gestures or signs or text. There was some very clever use of sign language. I found that the close-up of doing something facial was easy to relate to, to faces and hands. Most of what I did was based on that. There's one piece where I just taped over my whole face. There were dance pieces that created involvement. But I think there's so much movement in dance that takes place in between one frame and the next that you might miss an entire movement of how that body got from this place to that place. In eight and a half seconds the world has changed.
Apple eating worked well with this medium, because you could actually see something shrink down by the bites of eating. Most of the things I did were somewhat humorous. The more I worked with it, the more I thought it was a very personal kind of thing. I loved working with my glasses. I took a picture where I was wearing my glasses. Then I move it slightly, and it captures after the eight and a half seconds later how I've moved my glasses. The next one I might take my glasses off. And then finally pull it away.
I have a real love of photo booths, where you have no photographer. You're in there doing it yourself. I have a huge collection of photo booth images and tried to incorporate them into my visual art and things that I'm doing today. That is not so different from the stream of single images that you transmitted via SSTV. I keep changing, and I'm creating different pictures. And it's black and white. It's really stunning. People are talking about how it slows you down as you're watching these SSTV performances. It can seem boring at first, and yet the more you get into it, you get into the cycle. It really does suck you in. You just say, "Wow."

Tilman Baumgärtel: So, the limitations of this medium were also a challenge to your creativity?

Bill Barlett: Yes. Later we started to do these multipoint events, where we used a telephone conferencing service out of Denver, Colorado, that could provide audio link and the video link. So, each event was slightly more sophisticated. More events, more parties.

Tilman Baumgärtel: Did you see this as an art activity or rather an experiment with this new medium?

Bill Barlett: I think of it as art. My point of view was that of the initiator, as someone that brought people together. I had an interest in doing the *Sat-Tel-Comp* Collaboratory program. It really fit into that. I had an affinity for what we were doing. I saw myself as a facilitator of these activities, and it was an awful lot of work to put it all together, to get people involved and to make sure that there was something going on.

Tilman Baumgärtel: I assume these activities were so ephemeral that they were not recorded?

Bill Barlett: No, they were recorded. Because SSTV was an audio link, we could store the information, these beeping noises, onto an audio cassette connected to the Robot transceiver. It also played the recordings back. So, what we're faced with today is all of these audio cassettes, with all these beeps on them, but you need the Robot to decode these records.

Tilman Baumgärtel: Were these activities announced to the public? Was there an audience?

Bill Barlett: At first, there was virtually no audience. It was the group of artists that were there. Or if there were people in the gallery, where the event was taking place, we'd say, "Come on in. This is what we're doing." It was very spontaneous. The audience became part of the performances very quickly.

Figure 3: Bill Bartlett with the Robot Research 530 Phone Line Transceiver on the right side

Source: Open Space Archives, Victoria, BC, Canada.

Tilman Baumgärtel: What was the typical reaction of people when they first encountered SSTV?

Bill Barlett: It is very intuitive. You step in front of that camera and suddenly by having the two monitors you can see exactly what's taking place. And it doesn't take much of an instructional manual to picture yourself. It's just so simple.
As things progressed, we got into the use of satellites again. NASA provided the ATS-1 satellite for the PEACESAT educational program around the Pacific Rim, and there was a terminal at Simon Fraser University in Vancouver that we could link into. Slow Scan TV was the perfect way of using them, because it was dirt cheap. It was just like talking on the telephone. We did quite a number of events with them. Because of that, there are hundreds of people that I've worked with that I never met personally but only worked with at a distance.
In 1979, we did a series of events that were called *Pacific Rim Slow Scan*, where we connected the Vancouver Art Gallery with locations in New Zealand, Santa Cruz, and the Cook Islands via the PEACESAT Satellite. I think we did something like twenty link-ups to the South Pacific. I provided one loaned Robot 530 that was air-expressed from island to island. The installation was from April 20 to May 21, and we had transmissions each Friday as the Robot traveled from site to site the rest of the week. One day I come to the Art Gallery and our link-up was with the Cook Islands, and one of the guys there said: "Bill, we have a present for you this morning." And the camera

pans down on these two guys in the water. And out of the water they brought this humongous sea turtle. I believe that their unit was in a grass shack on the beach. So, you could move our equipment anywhere as long as you could plug it into a telephone jack.
So, that got us really out in the public. There were some nice articles written about it, and that got me invited to a big event on art and telecommunications at the San Francisco Museum of Modern Art. It was called "Artists' Use of Telecommunications Conference." That brought together many artists working with pre-internet online media.

Fig 4: Jim Starck performing via SSTV

Source: Screenshot of performance documentation.

Tilman Baumgärtel: You were also involved in some of the artistic uses of online communication that were also subject of this conference in San Francisco. Tell me about that …

Bill Barlett: In September 1978, I went to a conference in Toronto called "The Fifth Network." It was for independent video producers, and that's where I met the artists Robert Adrian X and Norman White. Norman was friends with Ian Sharp, who was the founder of the computer company I. P. Sharp that offered time-sharing services, which was one of the first online uses of computers. They ran the computer network of the Toronto Stock Exchange. What appealed to Norman was that they had a mailbox system for their techs out in the field so they could send email-type messages to their headquarters. So, Norman said, "Wouldn't it be great if we try to set up an online network for artists?"

Tilman Baumgärtel: But at that time not everybody had a computer.

Bill Barlett: Actually, that's very true. I went out and bought a Texas Instruments data terminal. They made a model with a suction modem built in, but mine wasn't that fancy. It had a separate modem, but I could literally go to a pay phone and take the receiver off the pay phone and plug it in and do my data connections. The message would go to their data center in Victoria, and then it would move from there. I. P. Sharp set up a mailbox for us artists that was called Artex.

Tilman Baumgärtel: That sounds like an early social medium for artists. Who else was on this network?

Bill Barlett: There was a small group of artists, including Robert Adrian X, Roy Ascott, Max Neuhaus, Norman White, Don Foresta, Eric Gidney, Western Front … Artex allowed to send online messages to every member of the group, and it included a program that they called Confer, where you could do an online thing together—a chat if you will. As time went on, the group got bigger and more people wanted to share more. We paid by the character at that time, and we paid for everything going out and everything coming in. Three messages at that time would cost about $9. So, the more people got involved, the more expensive it became. If you CCed out a project proposal that was 18 pages long, everyone receiving this document would have to pay for the word count, whether or not you wanted to receive it.

Tilman Baumgärtel: It must have been tremendously expensive to participate in this network.

Bill Barlett: It *was* tremendously expensive. That was one reasons why I eventually got uninvolved. In one letter, Robert talked about how he just cleared up a $20,000 debt. So, it did add up a lot. We eventually worked with the programmers to bring up something that was a little more cost effective. But it reached a point where the financial burden became too much.

Tilman Baumgärtel: You were involved with the online art project *The World in 24 Hours* by Robert Adrian X, which he did at the Ars Electronica in Austria in 1982, which brought together all these different means of pre-internet telecommunication media. Following the midday sun around the planet, artists from all over the world sent work via SSTV, fax, telephone, computer networks to Robert Adrian X in Linz in Austria, where it was presented. That was a truly global performance, prob-

ably the largest of these early network and telecommunication art projects of that time …

Bill Barlett: Yes, I participated from Western Front, an art space in Vancouver. But just before that I got a job with Canada Post. I was tired. I did a hell of a lot to build things up. And there was a lot of stress from working with a lot of artists, with organising things. It was really important to me to do whatever was necessary to make sure all the loose ends fit in coordinating a project. So, I became a postmaster on the small island that I lived on. And it really became a lifetime, fully pensioned job. I eventually became a trainer for Canada Post and spent six years involved with the Stamp Advisory Committee. It was a great job, and it provided a good, steady income. Looking at today's internet and interactive communications technology, what we worked on in the late 1970s seems primitive, but that's how things progress.

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